

ABSTRACT

A method for liquid phase oxidation of p-xylene with molecular oxygen to terephthalic acid that minimizes solvent loss through solvent
5 burn and minimizes the formation of incomplete oxidation products such as 4-carboxybenzaldehyde (4-CBA). P-xylene is oxidized at a temperature in the range of 120°C to 250°C and in the presence of a source of molecular oxygen and a catalyst composition substantially free of zirconium atoms comprising a source of nickel (Ni) atoms, a source of manganese (Mn) atoms, and a source of bromine (Br) atoms, to form a crude reaction mixture comprising terephthalic acid and incompletely oxidized reaction products comprising 4-CBA, wherein the stoichiometric molar ratio of bromine atoms to manganese atoms is 1.5 or less, and the amount of nickel atoms is at least 500 ppm.